REMARKS

The applicants note with appreciation the acknowledgement of the claim for priority under section 119 and the notice that all of the certified copies of the priority documents have been received.

The applicants acknowledge and appreciate receiving an initialed copy of the form PTO-1449 that was filed on 30 March 2004.

Claims 1-19 are pending. Claims 12-19 are new. Claims 3-7, 10, and 11 have been allowed. The applicants respectfully request reconsideration and allowance of this application in view of the above amendments and the following remarks.

Claims 1-11 were objected to for informalities. Each matter listed in paragraph 2 of the office action has been corrected, and the applicants thus request withdrawal of these objections.

Claim 5 was rejected under 35 USC 112, second paragraph, as being indefinite. Claim 5 has been amended to overcome any indefiniteness. In particular, "the gain determining resistor" has been changed to "a gain determining resistor," and "the analog input gain" has been changed to "an analog input gain." Therefore, the applicants respectfully request that this rejection be withdrawn.

Claims 1 and 2 were rejected under 35 USC 102(e) as being anticipated by the patent to Platt. The applicants respectfully request that this rejection be withdrawn for the following reasons:

Claim 1 includes the following:

first and second sensor units having vibrators oscillating independently; and

an input gain adjuster, which independently and variably adjusts at least one of an input gain of said first angular velocity sensing waveform and an input gain of said second angular velocity sensing waveform entered into said differential waveform detector, to reduce a residual in-phase component of said differential waveform.

The first and second sensor units are described on page 12, lines 7 to 13.

The input gain adjuster is shown in Fig. 1. The basis for the input gain adjuster is found on page 15, lines 15 to 19. The buffer amplifier 31 (i.e., the input gain adjuster) can independently perform the adjustment of the input gain of the angular velocity sensing voltage waveform supplied from the sensor unit 100, and the buffer amplifier 32 (i.e. the input gain adjuster) can independently perform the adjustment of the input gain of the angular velocity sensing voltage waveform supplied from the sensor unit 200.

Differences between present invention and Platt:

1. Vibrator structure and type of control

As recited in claim 1, the vibrator of the first sensor unit and the vibrator of the second sensor unit oscillate independently. More specifically, the two vibrators are independent from each other in the structures that oscillate. As understood from page 12, lines 7 to 13, of the specification, each of the vibrators 4a and 4b is elastically fixed to a drive frame 3 via a beam 6 giving a vibration fulcrum so that each vibrator can oscillate in the Y direction. Furthermore, the drive frame 3 is elastically fixed to a sensor frame 10 via a beam 2 giving a vibration fulcrum so that each vibrator can oscillate in the X direction.

On the other hand, according to the patent to Platt, two vibrators (proof masses 12 and 13) of a MEMS structure are physically linked or connected to each other and thus cooperate in "coupled oscillation." Since these vibrators (proof masses 12 and 13) cause resonant oscillation

at a particular frequency, there is no phase difference occurring between two vibrators in the detection signals.

According to the inventors of the present invention, the vibrators are inevitably subjected to manufacturing errors that possibly cause individual differences in their angular velocity sensing properties. When the vibrators are independent from each other in the oscillating structures, the individual differences cause a difference in the sensing accuracy of the in-phase acceleration components that may be detected by two combined sensors causing the opposite-phase vibrations. Accordingly, some of the in-phase components will reside even if the above-described processing for obtaining the differential waveform is carried out. The angular velocity sensing accuracy will thus deteriorate. This is the reason why adjustment of the detection signals is employed in the present invention.

On the other hand, Platt's MEMS structure does not provide an adjustment for the detection signals. Thus, there is a significant difference in control type between the present invention and Platt. Platt discloses a system relying on a feedback control for the drive signals and is accordingly different from the control of the present invention. The present invention does not use such a feedback control. In other words, Platt's MEMS structure performs adjustment of the drive signals, not of the detection signals. On the other hand, the present invention adjusts the detection signals themselves. In this respect, Platt's MEMS structure is very different from that of the present invention.

2. Gain adjustability

In claim 1, the input gain adjuster can independently and variably adjust the input gain of the first angular velocity sensing waveform and the input gain of the second angular velocity

sensing waveform entered into the differential waveform detector to reduce a residual in-phase component of the differential waveform.

In rejecting claim 1, the office action asserts that the MEMS structure of the patent to Platt anticipates the input gain adjusting means (gain stages 58 and 60) for adjusting at least one of an input gain of the first angular velocity sensing waveform and an input gain of the second angular velocity sensing waveform entered into the differential waveform detector to reduce a residual in-phase component of the differential waveform. However, this assertion is not supported by the description of Platt, although the examiner relies on column 2, line 61 to column 5, line 60. The gain stages 58 and 60 of Platt are apparently stationary gain circuits having no capability of adjusting their input gains (see column 5, line 16-17). As described above, the Platt's MEMS structure requires no adjustment of input gains of the gain stages 58 and 60 because Platt intends to adjust respective drive signals for motor drive combs 18 and 19, not the detection signals themselves. In this respect, Platt fails to disclose the claimed features of the present invention relating to the input gain adjuster.

As apparent from the circuit arrangement shown in Fig. 1 of this application, one of the gain determining resistors 31t, 31a is a variable resistor and, accordingly, the buffer amplifier 31 has the capability of variably adjusting the input gain. The same thing is true of the buffer amplifier 32.

For these reasons, the rejection of claim 1 is faulty and should be withdrawn. The device of claim 1 is patentably distinguished from Platt's MEMS structure.

Claims 8 and 9 were rejected under 35 USC 103(a) as being unpatentable over Platt in view of Nakamura. The applicants respectfully request that this rejection be withdrawn for the following reasons.

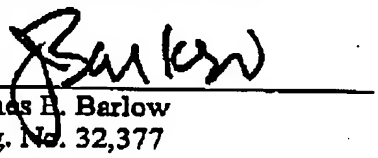
Claims 8 and 9 are dependent on claim 1. Therefore claims 8 and 9 are considered to be patentable for the reasons given above for the patentability of claim 1.

In addition, in rejecting claims 8 and 9, the examiner relies on the patent to Nakamura. However, the phase adjusting mechanism disclosed in Nakamura is for correcting a phase difference between a reference signal (a basic signal for sync detection) and a detection signal. Thus, the phase adjustment of Nakamura is different from that of the present invention. Therefore, even if Nakamura is combined with Platt, the terms of claims 8 and 9 cannot be satisfied.

In view of the foregoing, the applicants respectfully submit that this application is in condition for allowance. A timely notice to that effect is respectfully requested. If questions relating to patentability remain, the examiner is invited to contact the undersigned by telephone.

Please charge any unforeseen fees that may be due to Deposit Account No. 50-1147.

Respectfully submitted,



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